

CLAIMS

What is Claimed is:

- 5 1. An electronic system comprising:

 a sensor for coupling to a battery string at a single point and for sensing a
 signal thereof; and

 a logic circuit coupled to said sensor and for detecting a battery failure of
 said battery string and, in response thereto, said circuit for automatically
10 generating a message over a communication network indicating said battery
 failure.
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2. An electronic system as described in Claim 1 wherein said sensor
 senses current of said battery string and further comprising a signal
15 conditioning circuit coupled between said sensor and said logic circuit, said
 signal conditioning circuit for converting a current signal output from said sensor
 to a voltage signal supplied to said logic circuit.
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3. An electronic system as described in Claim 2 wherein said current of said
20 battery string is a ripple current through said battery string at said single point.
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4. An electronic system as described in Claim 1 wherein said sensor is a
 Hall effect clamp-on sensor electro-magnetically coupled to said battery string.

5. An electronic system as described in Claim 4 wherein said sensor senses ripple current through said battery string.

5 6. An electronic system as described in Claim 5 wherein said logic circuit detects said battery failure in response to said sensor detecting a ripple current through said battery string dropping below a prescribed threshold.

7. An electronic system as described in Claim 1 wherein said logic circuit
10 detects said battery failure in response to said sensor detecting an electrical signal of said battery string dropping below a prescribed threshold.

8. An electronic system as described in Claim 1 wherein said battery string is part of an un-interruptible power supply (UPS) circuit and wherein further said
15 logic circuit is also for detecting failure in a rectifier of said UPS circuit.

9. An electronic system as described in Claim 8 wherein said logic circuit detects said rectifier failure in response to said sensor detecting an electrical signal of said battery string raising above a prescribed threshold.

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10. An electronic system as described in Claim 1 wherein said message initiates generation of an electronic message (email) to a prescribed recipient and wherein said email describes said battery failure of said battery string.

11. A method for monitoring a battery system comprising:

using a sensor coupled at a single point of said battery system to sense a signal thereof;

5 determining that a threshold setting value indicating a failure of said battery system has been exceeded according to said signal; and

automatically generating a message over a communication network indicating said failure in response to said determining.

10 12. The method as recited in Claim 11 wherein said sensor senses a ripple current of said battery system and further comprising:

converting said ripple current to a voltage signal for use in said determining.

15 13. The method as recited in Claim 11 wherein said sensor comprises a Hall effect sensor electro-magnetically coupled with said battery system and further comprising:

using said Hall effect sensor to sense a ripple current of said battery system.

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14. The method as recited in Claim 13 wherein said determining determines that said ripple current has dropped below a prescribed threshold.

15. The method as recited in Claim 11 wherein said battery system is part of an un-interruptible power supply (UPS) circuit and further comprising:

detecting rectifier failure in said UPS circuit, wherein said logic circuit determines that said signal has exceeded a prescribed threshold.

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16. A battery alarm notification system comprising:

a battery string comprising a plurality of batteries coupled in series;

a sensor coupled at a single point of said battery string for sensing a ripple current thereof; and

10 a logic circuit coupled with said sensor for determining that said ripple current has dropped below a prescribed threshold and for automatically generating a message over a communication network in response to said determining.

15 17. The battery alarm notification system of Claim 16, wherein said sensor is a Hall effect sensor and further is a clamp-on sensor which is electromagnetically coupled with said battery string.

18. The battery alarm notification system of Claim 16 wherein said battery
20 string is part of an un-interruptible power system (USP) circuit comprising a rectifier circuit and wherein said logic circuit is further for automatically generating a message in response to detecting a failure of said rectifier circuit of said UPS system.

19. The battery alarm notification system of Claim 18 wherein said logic circuit determines that said ripple current has raised above a prescribed threshold.

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20. The battery alarm notification system of Claim 16 wherein said message initiates generation of an electronic message (e-mail) to a prescribed recipient and wherein said e-mail describes a battery failure of said battery string.

10 21. The battery alarm notification system of Claim 16 further comprising:
a signal converter for converting said ripple current to a voltage signal.

22. A method for monitoring a battery system comprising:
detecting a battery failure or one or more batteries of a battery string by
15 measuring a variation in ripple current therethrough; and
automatically reporting said battery failure detection via a communication network.

23. The method as recited in Claim 22 wherein said measuring is performed
20 using a electro-magnetically coupled sensor at a single point of said battery string.

24. The method as recited in Claim 23 wherein said sensor comprises a Hall effect sensor.

25. The method as recited in Claim 22 wherein said detecting comprises
5 determining that said ripple current has dropped below a prescribed threshold.

26. The method as recited in Claim 22 wherein said battery system is part of an un-interruptible power system (UPS) circuit comprising a rectifier circuit and further comprising:
10 determining that said ripple current has exceeded a prescribed threshold.

27. The method as recited in Claim 22 wherein said reporting comprises generating an electronic message (e-mail) to a prescribed recipient and
15 wherein said e-mail describes a battery failure of said battery system.

28. A method for monitoring a battery system comprising:
sensing at a single point of said battery system a signal thereof;
automatically determining a normal operating range of said signal over a
20 period of time;
recording in a memory a threshold value indicative of said normal operating range; and

determining that said signal exceeds said threshold value and automatically generating a failure message over a communication network in response thereto.

5 29. The method as recited in Claim 28 wherein said signal comprises a ripple current and wherein said sensing uses an electro-magnetically coupled sensor to sense said ripple current.

10 30. The method as recited in Claim 29 wherein said sensor comprises a Hall effect sensor.

31. The method as recited in Claim 29 wherein said Hall effect sensor determines that said ripple current has dropped below said threshold value.

15 32. The method as recited in Claim 29 wherein said battery system is part of an un-interruptible power supply (UPS) circuit comprising a rectifier circuit and further comprising:

determining that said ripple current has exceeded said threshold value.

20 33. The method as recited in Claim 28 wherein said message comprises an electronic message (e-mail) which is sent to a prescribed recipient and wherein said e-mail describes a battery failure of said battery system.